

12. A shoring panel wherein the cutting edge is fixed by bolts or pins and could be detached at any time as needed.

13. A shoring panel as set forth in the claim 11, wherein two rectangular steel tubes are welded on the top and the bottom, which are covered with a flat bar.

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14. A shoring panel as set forth in the claim 11, whereon a thin steel plate is added on one or either side of the panel between lifting plates and cover it from the top until the cutting edge.

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15. A hammering device of steel or other materials, pinned on the top of the shoring panel and covering only a small part of it for preventing damages on the panel from mechanical forces.

add 11 27

ABSTRACT

15 This apparatus relates to shoring of deep excavations such as pits or trenches. It includes vertical rail posts arranged symmetrically in pairs which are spaced from each other along the excavation, articulated trusses holding opposite rail posts against each other and large shoring panels sliding between adjacent rail posts on either side of the excavation. Each rail post has on either side one channel of stepped cross section guiding vertically two or more shoring panels. The connections between the post and the panel are partially or completely open. The open connections are performed by magnetic forces engendered by thin magnetic flat bars incorporated in the posts or the panels in the area of their contact. The articulated truss is of scissoring type composed of triangular cells only and their members have pinned connections. The cross members of the truss are pinned together in their mid-length enabling their relative rotation while their extremities are pinned into the vertical members which have several rows of pinning holes in order to adjust the width of the trench without need for additional spreaders. The vertical members of the truss slide formlocking between pair of opposite posts and could be adjusted at any level from the bottom of excavation.